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# **Multi-Function Staring Sensor Suite Advanced Technology Demonstration**

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# Multi-Function Staring Sensor Suite ATD

*FCS Combat Overmatch Capability:  
"See First, Shoot First, Kill First"*

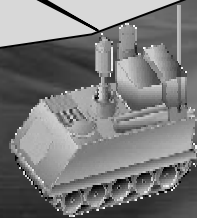
**LONG RANGE  
TARGET ID**

**RAPID WIDE  
AREA SEARCH**

**Threat Detection  
Capability**

**Identification Range Capability**

**On-The-Move**



## Program Summary

Contract: 48 Month ATD

PMO: US Army CECOM, NVESD

PM: Mr Paul Laster

User: Ft Knox

Prime Contractor: Raytheon

- *Multi Band Pathfinder for Third Generation Sensor*
- *Testbed for Performance and Cost Trade Offs*

**Raytheon**



# Needs Assessment

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# MFS<sup>3</sup> ATD Key Objectives

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## Tactical Demonstration of:

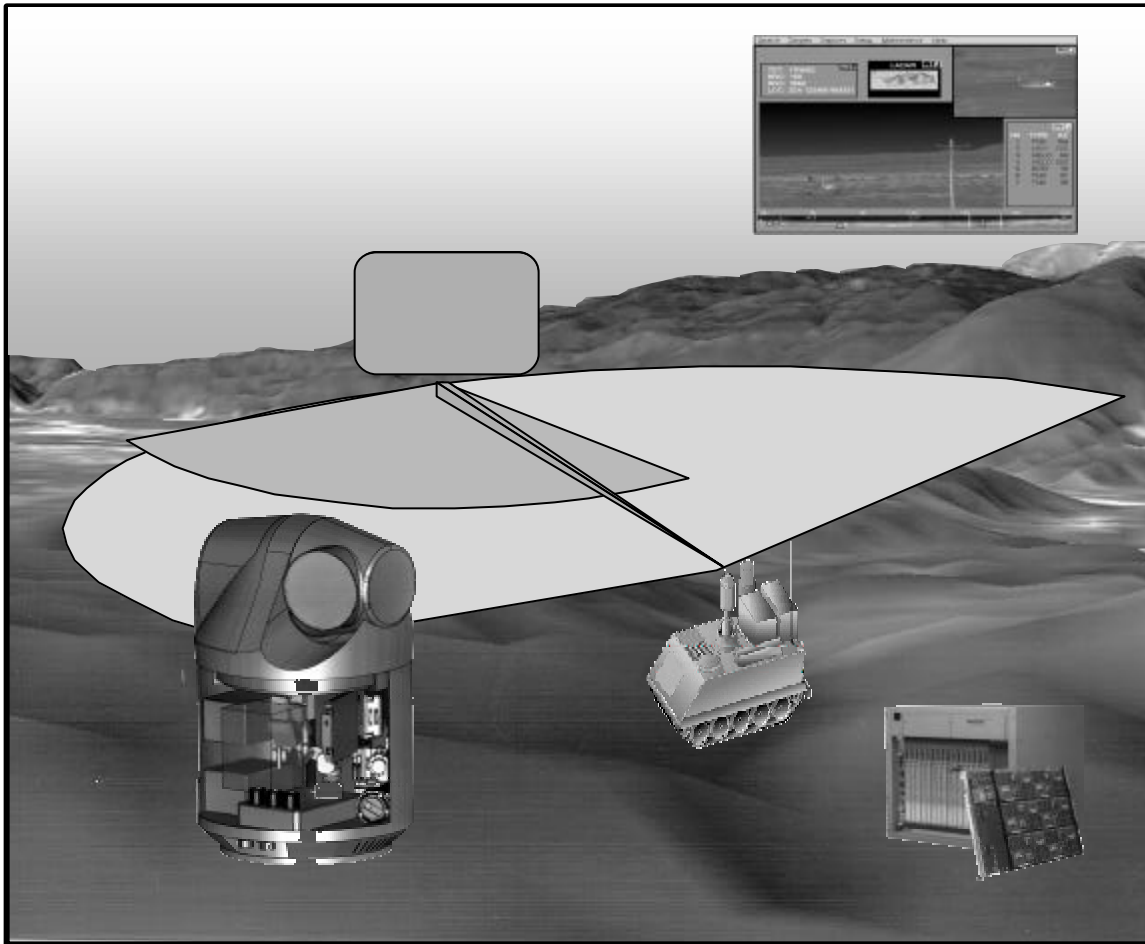
- Increased resolution & ID performance of mid-wave staring technology in field environment; ID beyond threat detection
- Rapid, automated, wide area search with staring detector; high resolution and medium resolution
- Multi-Spectral EO Sensor with single detector/dewar
- Expanded / Fused ATR concepts
  - Multi-Spectral Detection
  - Moving Target Indication
  - Mid-Wave Detection / Recognition
  - Acoustics cueing
  - Designed to accommodate LADAR & RADAR
- On-The-Move operation

***See First, Make Decisions Quickly, &  
Execute Immediately Before Being Detected***

**Raytheon**



# MFS<sup>3</sup> Operations Concept



- Automated Wide Area Search
- 180 x 9 Degree Search
- Aided D / R / I
  - Multi-Spectral FLIR
  - LADAR
  - Acoustics
  - OEO
- Threats
  - Ground Vehicles
  - Rotary Wing
  - Personnel
- Fix Target Location
- Automatically Track
  - Laser Designate
  - Target Data Base
- Day / Night Operation
- Extended Operation
  - Aux Power System
  - Environmental Control
- Situational Awareness



# MFS<sup>3</sup> Components

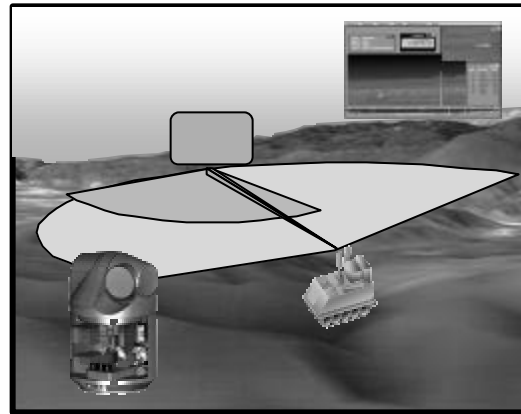
## Multi-Spectral Sensors

- Single 8" Aperture EO Suite
- 640 x 480 Staring FLIR; 4 FOV
  - UNFOV: 0.4°
  - NFOV: 0.9°
  - MFOV: 3.5°
  - WFOV: 7.6°

- Accommodates Day TV; 4FOV
- Eyesafe Laser Rangefinder
- Accommodates Multi-Function

## LADAR

- Rangefinder
- Designator
- Profile
- OEO Detection
- Stabilized LOS
- De-rolled Image
- Field of Regard
  - Az: 360 Continuous
  - EL: -20 / +180
- Acoustics



## Processing

- Automatic Wide Area Search
- Aided Target Detection
- Precision, Far Target Location
- COTS / Open Architecture
- Growth
  - Aided Target Recognition
  - LADAR ATR
  - Sensor Fusion
  - Tactical Internet

## System Integration

- Low Sensor Signature
- On-The-Move Operation

## Operator Controls & Display

- Sensor Display Windows
  - 180° x 9° FOR Image
  - 20° x 9° Sector Image
  - Real Time Display
  - Stored Image Display
- Supports Situation Display
- Hand Grip with Slew Control
- Hard Control Panel
- Keyboard



# MFS<sup>3</sup> ATD Status

Post Award  
Conference



Preliminary  
Design Review

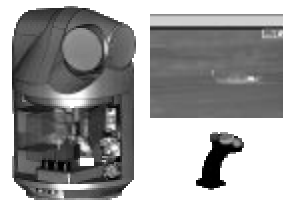


Critical  
Design Review



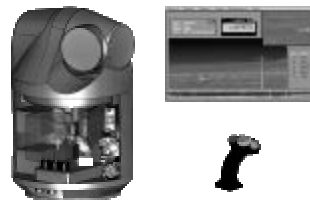
CY98				CY99				CY00				CY01				CY02				CY03			
Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4

MFS3 Manual ID  
Demonstration



- User operation
- Manual ID
- Day / Night
- Non-obscured
- Obscured

Wide Area Search  
Demonstration



- Rapid Wide Area Search
- Staring Detector with Scanner

MFS3 Adv Technology  
Demonstration

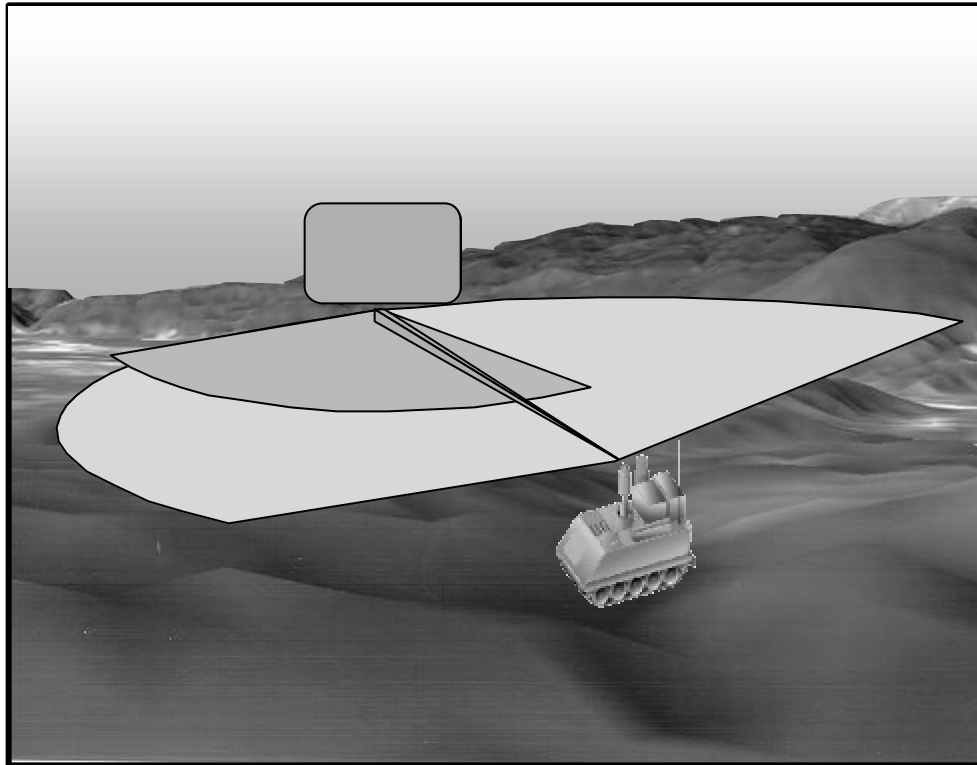


- Vehicle Mounted
- User Operation
- Aided Multi-Spectral Detection
- On-The-Move



# Multi-Function Staring Sensor Suite ATD

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***PATHFINDER TO “AFFORDABLE, HIGH UTILITY”,  
NEXT GENERATION TECHNOLOGIES !***